Contents of Volume 67

No. 1. JULY 1989

BRIEF REVIEW

Neurochemicals and respiratory control during development
I. R. Moss and J. G. Inman 1

Use of doubly labeled water technique in soldiers training for jungle warfare
C. H. Forbes-Ewan, B. L. L. Morrissey, G. C. Gregg, and D. R. Waters 14

Insulin action in human thighs after one-legged immobilization
E. A. Richter, B. Kiens, M. Mizuno, and S. Strange 19

Contrasts in muscle and myofibers of elite male and female bodybuilders
S. E. Alway, W. H. Grumbt, W. J. Gonyea, and J. Stray-Gundersen 24

Effects of hypoxia on metabolic rate of conscious adult cats during cold exposure
H. Gautier, M. Bonora, and J. E. Remmers 32

Exercise intensity and glucose tolerance in trained and nontrained subjects
J. C. Young, J. Enslin, and B. Kuca 39

Role of thromboxane receptors in Forssman shock in guinea pigs
W. A. Schumacher, T. E. Steinbacher, G. T. Allen, and M. L. Ogletree 44

Blood pressure changes during running in humans: the "beat" phenomenon
P. Palatini, L. Mos, P. Mormino, A. Di Marco, L. Munari, G. Fazio, G. Giuliano, A. C. Pessina, and C. Dal Palù 52

Two-cytochrome metabolic model for carotid body Pti_{O_2} and chemosensitivity changes after hemorrhage
D. G. Buerk, P. K. Nair, and W. J. Whalen 60

Skeletal muscle lipid peroxidation in exercised and food-restricted rats during aging
J. W. Starnes, G. Cantu, R. P. Farrar, and J. P. Kehrer 69

Effect of osmolality on availability of glucose ingested during prolonged exercise in humans
B. J. Jandrain, F. Pirnay, M. Lacroix, F. Mosora, A. J. Scheen, and P. J. Lefebvre 76

Enzyme activities of FT and ST muscle fibers in heavy-resistance trained athletes
P. A. Tesch, A. Thorsson, and B. Essén-Gustavsson 83

Neutrophil kinetics in rabbits during infusion of zymosan-activated plasma
C. M. Doerschuk, M. F. Allard, and J. C. Hogg 88

Regional hemodynamic responses to hypoxia and hypermetabolism in polycythemic dogs
R. L. Stork, S. L. Dodd, C. K. Chapler, and S. M. Cain 96

Effect of β-adrenergic blockade on response to exercise in sedentary and active subjects
V. Brusasco, B. Violante, and G. Buccheri 103

Coupling between respiratory and stepping rhythms during locomotion in decerebrate cats
K. Kawahara, S. Kumagai, Y. Nakazono, and Y. Miyamoto 110

Adenine nucleotide degradation in human skeletal muscle during prolonged exercise
S. Broberg and K. Sahlin 116

NADH shuttle enzymes and cytochrome b_5 reductase in human skeletal muscle: effects of strength training
P. G. Schantz and M. Kăllman 123

Effect of cerebrospinal fluid hyperosmolality on sweating in the heat-stressed patas monkey
M. D. Owen, R. D. Matthes, and C. V. Gisolfi 128

Effects of CSF ANG II and AVP on sweating in the heat-stressed patas monkey
M. D. Owen, R. D. Matthes, and C. V. Gisolfi 134

Effect of β-adrenoceptor blockade on renin-aldosterone and α-ANF during exercise at altitude
P. Bouissou, J.-P. Richalet, F. X. Galen, M. Lartigue, P. Larmignat, F. Devaux, C. Dubray, and A. Keromes 141

CONTENTS OF VOLUME 67

Some features of oscillatory flow in a model bifurcation
D. L. Jan, A. H. Shapiro, and R. D. Kamm 147

Variability of responses across training levels to maximal treadmill exercise
S. B. Kyle, B. L. Smoak, L. W. Douglass, and P. A. Deuster 160

Lung weight in vivo measured with computed tomography and rebreathing of soluble gases
R. W. Hyde, J. C. Wandtke, P. J. Fahey, M. J. Utell, D. B. Plewes, and M. Goske 166

Expression of airway contractile properties and acetylcholinesterase activity in swine
T. M. Murphy, R. W. Mitchell, J. S. Blake, M. M. Mack, E. A. Kelly, N. M. Munoz, and A. R. Leff 174

β-Adrenergic relaxation of dog trachealis: contractile agonist-specific interaction
S. M. Koenig, R. W. Mitchell, E. Kelly, S. R. White, A. R. Leff, and K. J. Popovich 181

Dopamine and ventilatory effects of hypoxia and almitrine in chronically hypoxic rats
R. A. Wach, D. Bee, and G. R. Barer 186

ECF pH dynamics within the ventrolateral medulla: a microelectrode study
K. Ichikawa, S. Kuwana, and H. Arita 193

Functional mechanism of expiratory pattern generator
M. Sibuya and I. Homma 199

Influence of respiratory drive on airway responses to excitation of lung C-fibers
M. A. Haxhiu, E. C. Deal, and N. S. Cherniack 203

Mechanical and metabolic alterations in rat diaphragm during electrical stimulation
P. S. Massarelli, H. J. Green, R. L. Hughson, and M. T. Sharratt 210

β-Adrenergic blockade alters whole-body leucine metabolism in humans
L. S. Lamont, D. G. Patel, and S. C. Kalhan 221

Variability of parenchymal expansion measured by computed tomography
J. R. Rodarte, M. Chaniotakis, and T. A. Wilson 226

Stimulus interaction between CO_2 and almitrine in the cat carotid chemoreceptors
S. Lahiri, A. Mokashi, W. Huang, A. K. Sherpa, and G. Di Giulio 232

Chronic CO inhalation and carotid body catecholamines: testing of hypotheses
S. Lahiri, D. G. Penney, A. Mokashi, and K. H. Albertine 239

Effect of sleep on nocturnal bronchoconstriction and ventilatory patterns in asthmatics
R. D. Ballard, M. C. Saathoff, D. K. Patel, P. L. Kelly, and R. J. Martin 243

Measurement of sympathetic nerve activity in the unanesthetized rat
J. P. Flückiger, G. Gremaud, B. Waeber, A. Kulik, A. Ichino, J. Nussberger, and H. R. Brunner 250

Reflex cardiovascular and ventilatory responses to increasing H^+ activity in cat hindlimb muscle
D. M. Rotto, C. L. Stebbins, and M. P. Kaufman 256

Ventilatory response to rowing and cycling in elite oarswomen
S. E. Szal and R. B. Schoene 264

Activation of masseter muscles with inspiratory resistance loading
D. E. Hollowell and P. M. Suratt 270

Transepithelial prostacyclin gradient in isolated canine trachea
D. H. Eidelman, W. S. Powell, S. Bellofiore, and J. G. Martin 276

Thermal and metabolic responses to cold by men and by eumenorrheic and amenorrheic women
T. E. Graham, M. Viswanathan, J. P. Van Dijk, A. Bonen, and J. C. George 282

Evidence for tissue diffusion limitation of $\dot{V}O_{2\,max}$ in normal humans
J. Roca, M. C. Hogan, D. Story, D. E. Bebout, P. Haab, R. Gonzalez, O. Ueno, and P. D. Wagner 291

Accuracy of pulse oximetry to estimate HbO_2 fraction of total Hb during exercise
S. K. Powers, S. Dodd, J. Freeman, G. D. Ayers, H. Samson, and T. McKnight 300

Effect of elevated vascular pressure transients on protein permeability in the lung
M. B. Maron 305

Respiratory adaptation to chronic hypercapnia in newborn rats
R. Rezzonico and J. P. Mortola 311

Effect of pyocyanin and 1-hydroxyphenazine on in vivo tracheal mucus velocity
N. C. Munro, A. Barker, A. Rutman, G. Taylor, D. Watson, W. J. McDonald-Gibson, R. Towart, W. A. Taylor, R. Wilson, and P. J. Cole 316

Forearm metabolic asymmetry detected by ^{31}P-NMR during submaximal exercise
J. R. Minotti, E. C. Johnson, T. L. Hudson, R. R. Sibbitt, L. E. Wise, E. Fukushima, and M. V. Icenogle 324

Norepinephrine induces lung vascular prostacyclin synthesis via α_1-adrenergic receptors
H. L. Wang and N. F. Voelkel 330

Effects of pneumatic antishock garment inflation in normovolemic subjects
B. J. Rubal, M. R. Geer, and W. H. Bickell 339

O_2- and pneumonia-induced lung injury. I. Pathological and morphometric studies
J. J. Coalson, R. J. King, V. T. Winter, T. J. Prihoda, A. R. Anzueto, J. I. Peters, and W. G. Johanson, Jr. 346

O_2- and pneumonia-induced lung injury. II. Properties of pulmonary surfactant
R. J. King, J. J. Coalson, J. J. Seidenfeld, A. R. Anzueto, D. B. Smith, and J. I. Peters 357

Time of application of negative pressure pulses and upper airway muscle activity
D. L. Woodall, J. A. Hokanson, and O. P. Mathew 366

Analysis of responses to sympathetic nerve stimulation in the feline pulmonary vascular bed
A. L. Hyman and P. J. Kadowitz 371

Analysis of bronchoconstrictor responses to platelet-activating factor in the cat
D. C. Underwood and P. J. Kadowitz 377

Thermoregulation in hypergravity-acclimated rats
C. B. Monson, S. L. Patterson, J. M. Horowitz, and J. Oyama 383

Fitting piecewise linear regression functions to biological responses
E. Vieth 390

A system to reproduce and quantify the biomechanical environment of the cell
F. K. Winston, E. J. Macarak, S. F. Gorfien, and L. E. Thibault 397

A PAF antagonist blocks antigen-induced airway hyperresponsiveness and inflammation in sheep
M. Solèr, M. W. Sielczak, and W. M. Abraham 406

Surfactant subtypes of mice: metabolic relationships and conversion in vitro
N. J. Gross and K. R. Narine 414

Pulmonary permeability in never-smokers between 21 and 67 yr of age
S. Groth, F. Hermansen, and N. Rossing 422

Surfactant metabolism in surfactant-treated preterm ventilated lambs
M. Ikegami, A. Jobe, T. Yamada, A. Priestly, L. Ruffini, E. Rider, and S. Seidner 429

Mechanism of enhanced cold tolerance by an ephedrine-caffeine mixture in humans
A. L. Vallerand, I. Jacobs, and M. F. Kavanagh 438

Effect of pH on pulmonary vascular tone, reactivity, and arachidonate metabolism
I. S. Farrukh, G. H. Gurtner, P. B. Terry, W. Tohidi, J. Yang, N. F. Adkinson, Jr., and J. R. Michael 445

MODELING METHODOLOGY FORUM

Mathematical analysis of running performance and world running records
F. Péronnet and G. Thibault 453

SPECIAL COMMUNICATIONS

Organ culture of frog muscle: maintenance of mass, enzyme levels, and contractile force
Y. Ohira, M. Ohira, M. Chen, and J. O. Holloszy 466

Effects of temperature and composition on the viscosity of respiratory gases
M. J. Turner, I. M. MacLeod, and A. D. Rothberg 472

Simultaneous acquisition of ECG, BCG, and blood pressure from chick embryos in the egg
H. Tazawa, Y. Suzuki, and H. Musashi 478

RAPID COMMUNICATIONS

Metabolic activation of carotid body glomus cells by hypoxia
A. Obeso, C. Gonzalez, B. Dinger, and S. Fidone 484

Measurement of alveolar pressure in closed-chest dogs during flow interruption
J. H. T. Bates, T. Abe, P. V. Romero, and J. Sato 488

ABSTRACTS FROM CURRENT LITERATURE 493

No. 2. AUGUST 1989

BRIEF REVIEW

Energy and thermal regulation during bed rest and spaceflight
J. E. Greenleaf 507

CO_2 sensitivity changes during the menstrual cycle
K. Dutton, B. A. Blanksby, and A. R. Morton 517

Reversal of hypoxia-induced decrease in human cardiac response to isoproterenol infusion
J.-P. Richalet, J.-L. Le-Trong, C. Rathat, P. Merlet, P. Bouissou, A. Keromes, and P. Veyrac 523

Lack of alveolar O_2 during lung reperfusion does not decrease edema formation
P. T. Overand, M. J. Bishop, B. L. Eisenstein, E. Y. Chi, M. Su, and F. W. Cheney 528

Inertance of the respiratory system in ponies
T. Art, P. Lekeux, P. Gustin, D. Desmecht, H. Amory, and M. Paiva 534

Role of adenosine in hypoxic ventilatory depression
M. Runold, H. Lagercrantz, N. R. Prabhakar, and B. B. Fredholm 541

Influence of work rate on ventilatory and gas exchange kinetics
R. Casaburi, T. J. Barstow, T. Robinson, and K. Wasserman 547

Contrasting effects of inflammatory stimuli on neutrophil and monocyte adherence to endothelial cells
D. W. Kamp, K. D. Bauer, A. Knap, and M. M. Dunn 556

Furosemide and cerebrospinal fluid ions during acute respiratory acidosis
S. Javaheri, J. F. Freidel, and P. J. Davis 563

Effects of a draft-loaded interval-training program on skeletal muscle in the horse
M. Gottlieb, B. Essén-Gustavsson, A. Lindholm, and S. G. B. Persson 570

Effects of hypoxia on thermal polypnea in intact and carotid body-denervated conscious cats
M. Bonora and H. Gautier 578

Serotonin increases excitability of rabbit C-fiber neurons by two distinct mechanisms
E. P. Christian, G. E. Taylor, and D. Weinreich 584

Histochemical characteristics of human expiratory and inspiratory intercostal muscles
M. Mizuno and N. H. Secher 592

Effects of midline laparotomy on expiratory muscle activation in anesthetized dogs
G. A. Farkas and A. De Troyer 599

Effects of albumin, dextran, and hyaluronidase on pulmonary interstitial conductivity
S. J. Lai-Fook, N. L. Rochester, and L. V. Brown 606

Removal of excessive bronchial secretions by asymmetric high-frequency oscillations
L. Freitag, W. M. Long, C. S. Kim, and A. Wanner 614

Oxidative capacity and capillary density of diaphragm motor units
J. G. Enad, M. Fournier, and G. C. Sieck 620

Do transvascular forces in isolated lobe preparations equilibrate?
B. J. Hancock, M. Hoppensack, and L. Oppenheimer 628

Influence of weight bearing on the adaptations of rat plantaris to ablation of its synergists
R. N. Michel, A. E. Olha, and P. F. Gardiner 636

Maturational and anesthetic effects on apneic thresholds in lambs
C. D. Kurth, A. A. Hutchison, D. C. Caton, and P. W. Davenport 643

Relationship of contraction capacity to metabolic changes during recovery from a fatiguing contraction
K. Sahlin and J. M. Ren 648

In vivo regional diaphragm function in dogs
J. Sprung, C. Deschamps, R. D. Hubmayr, B. J. Walters, and J. R. Rodarte 655

Influence of size of emboli on extravascular lung water
C. A. Dawson, D. A. Rickaby, and J. H. Linehan 663

Aminophylline enhances contractility of frog skeletal muscle: an effect dependent on extracellular calcium
J. W. Ridings, S. R. Barry, and J. A. Faulkner 671

Recovery of short-term power after dynamic exercise
H. C. Hitchcock 677

Pulmonary rapidly adapting receptors reflexly increase airway secretion in dogs
J. Yu, H. D. Schultz, J. Goodman, J. C. G. Coleridge, H. M. Coleridge, and B. Davis 682

Surfactant replacement attenuates the increase in alveolar permeability in hyperoxia
P. C. Engstrom, B. A. Holm, and S. Matalon 688

Diaphragmatic displacement measured by fluoroscopy and derived by Respitrace
J. A. Verschakelen, K. Deschepper, T. X. Jiang, and M. Demedts 694

Effect of phase shifts in pressure-flow relationship on response to inspiratory resistance
M. Younes and R. Sanii 699

Geometry and kinematics of dog ribs
S. S. Margulies, J. R. Rodarte, and E. A. Hoffman 707

Epithelial modulation of trachealis muscle tension is calcium and temperature dependent
A. Lev, G. C. Christensen, J. P. Ryan, M. Wang, and S. G. Kelsen 713

Alterations in respiratory muscle activation in the ischemic fatigued canine diaphragm
G. S. Supinski, A. F. DiMarco, F. Hussein, and M. D. Altose 720

Effect of regional alveolar hypoxia on gas exchange in dogs
K. B. Domino, M. P. Hlastala, B. L. Eisenstein, and F. W. Cheney 730

Menstrual status and plasma vasopressin, renin activity, and aldosterone exercise responses
M. J. De Souza, C. M. Maresh, M. S. Maguire, W. J. Kraemer, G. Flora-Ginter, and K. L. Goetz 736

Cerebral blood flow during submaximal and maximal dynamic exercise in humans
S. N. Thomas, T. Schroeder, N. H. Secher, and J. H. Mitchell 744

Influence of upper airway negative pressure reflex on response to airway occlusion in sleeping infants
B. T. Thach, G. L. Schefft, D. L. Pickens, and A. P. Menon 749

Acute anemia increases lactate production and decreases clearance during exercise
S. G. Gregg, R. S. Mazzeo, T. F. Budinger, and G. A. Brooks 756

Interactive effects of anemia and muscle oxidative capacity on exercise endurance
S. G. Gregg, W. T. Willis, and G. A. Brooks 765

Effect of air entrainment on airway pressure during endotracheal gas injection
D. Isabey, G. Boussignac, and A. Harf 771

Effects of thoracic gas compression on maximal and partial flow-volume maneuvers
R. D. Fairshter, R. B. Berry, A. F. Wilson, T. Brideshead, and D. Mukai 780

Effects of angiotensin blockade on the splanchnic circulation in normotensive humans
C. Stadeager, B. Hesse, O. Henriksen, N. J. Christensen, F. Bonde-Petersen, J. Mehlsen, and J. Giese 786

Inhalation of adenosine 5′-monophosphate increases methacholine airway responsiveness
G. Rosati, F. E. Hargreave, and E. H. Ramsdale 792

Influence of pregnancy on ventilatory and carotid body neural output responsiveness to hypoxia in cats
B. Hannhart, C. K. Pickett, J. V. Weil, and L. G. Moore 797

Exercise training and the differential prolactin response in male and female rats
P. W. Sylvester, S. Forczek, M. M. Ip, and C. Ip 804

Essential fatty acid-deficient rats are resistant to oleic acid-induced pulmonary injury
H. A. Ball, J. A. Cook, K. M. Spicer, W. C. Wise, and P. V. Halushka 811

Combination of constant-flow and continuous positive-pressure ventilation in canine pulmonary edema
J. I. Sznajder, C. J. Becker, G. P. Crawford, and L. D. H. Wood 817

Developmental changes in the tracheal mucociliary system in neonatal sheep
R. J. Phipps, W. M. Abraham, A. T. Mariassy, P. J. Torrealba, M. W. Sielczak, A. Ahmed, M. McCray, J. S. Stevenson, and A. Wanner 824

Sinoaortic deafferentation reduces intrapulmonary shunt in dogs with oleic acid lung injury
M. Leeman, J. Closset, J.-L. Vachiéry, P. Lejeune, C. Mélot, and R. Naeije 833

Effect of dehydration on interstitial pressures in the isolated dog lung
M. R. Glucksberg and J. Bhattacharya 839

Edema from cyclooxygenase products of endogenous arachidonic acid in isolated lung
M. R. Littner and F. D. Lott 846

Capsaicin-induced bronchodilation in mild asthmatic subjects: possible role of nonadrenergic inhibitory system
J.-W. J. Lammers, P. Minette, M. T. McCusker, K. F. Chung, and P. J. Barnes 856

Oxygen transport during exercise in large mammals. I. Adaptive variation in oxygen demand
J. H. Jones, K. E. Longworth, A. Lindholm, K. E. Conley, R. H. Karas, S. R. Kayar, and C. R. Taylor 862

Oxygen transport during exercise in large mammals. II. Oxygen uptake by the pulmonary gas exchanger
M. Constantinopol, J. H. Jones, E. R. Weibel, C. R. Taylor, A. Lindholm, and R. H. Karas 871

SPECIAL COMMUNICATIONS

Blood gas measurements during exercise: errors due to temperature correction
J. H. Jones, C. R. Taylor, A. Lindholm, R. Straub, K. E. Longworth, and R. H. Karas 879

Detection of a lactate threshold during incremental exercise?
R. H. Morton 885

Liquid-filled esophageal catheter for measuring pleural pressure in preterm neonates
A. L. Coates, G. M. Davis, P. Vallinis, and E. W. Outerbridge 889

RAPID COMMUNICATIONS

Ten weeks of aerobic training do not affect lower body negative pressure responses
J. T. Lightfoot, R. P. Claytor, D. J. Torok, T. W. Journell, and S. M. Fortney 894

LETTERS TO THE EDITOR

Determination of Po_2 from saturation
R. K. Ellis; J. W. Severinghaus 902

ABSTRACTS FROM CURRENT LITERATURE

903

No. 3. SEPTEMBER 1989

BRIEF REVIEW

Circulation of the airway mucosa
A. Wanner 917

Wrist flexor muscles of elite rowers measured with magnetic resonance spectroscopy
K. K. McCully, B. P. Boden, M. Tuchler, M. R. Fountain, and B. Chance 926

Reassessment of the interruption technique for measuring flow resistance in humans
G. Liistro, D. Stănescu, D. Rodenstein, and C. Veriter 933

Effects of clonidine and dihydralazine on atrial natriuretic factor and cGMP in humans
M. Wehling, T. Müller, J. M. Heim, R. Lorenz, H. Witzgall, J. Weil, and R. Gerzer 938

Effects of periodic weight support on medial gastrocnemius fibers of suspended rats
S. C. Graham, R. R. Roy, E. O. Hauschka, and V. R. Edgerton 945

Influence of CPAP on reflex responses to tracheal irritation in anesthetized humans
T. Nishino, K. Sugimori, K. Hiraga, and Y. Honda 954

Prostaglandin D_2 causes accumulation of eosinophils in the lumen of the dog trachea
D. L. Emery, T. D. Djokic, P. D. Graf, and J. A. Nadel 959

Blunted febrile response to intravenous endotoxin in starved rats
O. Shido, T. Nagasaka, and T. Watanabe 963

Nasal obstruction as a cause of reduced P_{CO_2} and disordered breathing during sleep
Y. Tanaka and Y. Honda 970

Effects of respiratory drive on upper airways in sleep apnea patients and normal subjects
F. Sériès, Y. Cormier, M. Desmeules, and J. La Forge 973

Sympathetic nerve activity related to local fatigue sensation during static contraction
M. Saito, T. Mano, and S. Iwase 980

Lung pressures and gas transport during high-frequency airway and chest wall oscillation
M. C. K. Khoo, T.-H. Ye, and N. H. Tran 985

Minimization of lung pressure swings during high-frequency ventilation: a model
M. C. K. Khoo, S. M. Yamashiro, and P. Yamashiro 993

Bronchial artery ligation modifies pulmonary edema after exposure to smoke with acrolein
C. A. Hales, P. Barkin, W. Jung, D. Quinn, D. Lamborghini, and J. Burke 1001

Lung injury in the neonatal piglet caused by hyperoxia and mechanical ventilation
J. M. Davis, D. P. Penney, R. H. Notter, L. Metlay, B. Dickerson, and D. L. Shapiro 1007

Flow and volume dependence of expiratory resistance in anesthetized cats
M. Skaburskis, F. Shardonofsky, and J. Milic-Emili 1013

Effects of malaria on O_2 consumption and brown adipose tissue activity in mice
A. L. Cooper, M. J. Dascombe, N. J. Rothwell, and M. J. Vale 1020

Respiratory elastic load compensation in anesthetized patients with kyphoscoliosis
A. Baydur, S. M. Swank, C. M. Stiles, and C. S. H. Sassoon 1024

Transverse images of the human thoracic trachea during forced expiration
M. Thiriet, J. M. Maarek, D. A. Chartrand, C. Delpuech, L. Davis, C. Hatzfeld, and H. K. Chang 1032

Metabolic and pharmacokinetic activity of the isolated sheep bronchial circulation
C. J. Grantham, J. T. Jackowski, A. Wanner, and U. S. Ryan 1041

Submaximal exercise in emphysema and malnutrition at two levels of carbohydrate and fat intake
S. A. Goldstein, J. Askanazi, D. H. Elwyn, B. Thomashow, J. Milic-Emili, V. Kvetan, C. Weissman, and J. M. Kinney 1048

Effect of dimethylthiourea on the neutrophil myeloperoxidase pathway
A. L. Sagone, Jr., R. M. Husney, M. D. Wewers, D. J. Herzyk, and W. B. Davis 1056

CONTENTS OF VOLUME 67

Adhesive strength of single muscle cells to basement membrane at myotendinous junctions
J. G. Tidball and M. Chan 1063

Blood sulfhydryl level increases during hyperoxia: a marker of oxidant lung injury
C. J. Beehler, M. L. Simchuk, K. M. Toth, S. K. Drake, N. B. Parker, C. W. White, E. M. Berger, R. J. Sanderson, and J. E. Repine 1070

Effect of fenoldopam on preconstricted isolated salt-perfused rat lungs
M. J. Polak, M. E. Knight, G. E. Gause, R. L. Bucciarelli, and W. Drummond 1076

Determinants and limits of pressure-preset ventilation: a mathematical model of pressure control
J. J. Marini, P. S. Crooke III, and J. D. Truwit 1081

Relationship of venous P_{O_2} to muscle P_{O_2} during hypoxemia
G. Gutierrez, N. Lund, A. L. Acero, and C. Marini 1093

Determinants of bone density among athletes engaged in weight-bearing and non-weight-bearing activity
J. E. Block, A. L. Friedlander, G. A. Brooks, P. Steiger, H. A. Stubbs, and H. K. Genant 1100

Abrupt changes in mixed venous blood gas composition after the onset of exercise
P. Casaburi, J. Daly, J. E. Hansen, and R. M. Effros 1106

Lateral pontine lesions affect central chemosensitivity in unanesthetized fetal lambs
B. M. Johnston and P. D. Gluckman 1113

Hypoxic ventilatory response and arterial desaturation during heavy work
S. R. Hopkins and D. C. McKenzie 1119

Autosomal recessive inheritance of airway hyperreactivity to 5-hydroxytryptamine
R. C. Levitt and W. Mitzner 1125

Repeated antigen challenge induces airway hyperresponsiveness with tissue eosinophilia in guinea pigs
K. Ishida, L. J. Kelly, R. J. Thomson, L. L. Beattie, and R. R. Schellenberg 1133

Exercise training increases coronary transport reserve in miniature swine
M. H. Laughlin, K. A. Overholser, and M. J. Bhatte 1140

Aminophylline effects on ventilatory response to hypoxia and hyperoxia in normal adults
D. Georgopoulos, S. G. Holtby, D. Berezanski, and N. R. Anthonisen 1150

Increased chemoreceptor output and ventilatory response to sustained hypoxia
D. Georgopoulos, S. Walker, and N. R. Anthonisen 1157

Heterogeneity of maximal lobar emptying rates in dogs with compensatory lung growth
S. N. Mink, S. G. Holtby, D. J. Berezanski, L. Oppenheimer, and N. R. Anthonisen 1164

Respiratory activities of intralaryngeal branches of the recurrent laryngeal nerve
D. Zhou, Q. Huang, W. M. St. John, and D. Bartlett, Jr. 1171

Influence of lung volume on activities of branches of the recurrent laryngeal nerve
Q. Huang, D. Zhou, W. M. St. John, and D. Bartlett, Jr. 1179

Elevated intracranial pressure increases pulmonary vascular permeability to protein
M. D. McClellan, I. M. Dauber, and J. V. Weil 1185

Effect of changes in lung volume on respiratory system compliance in newborn infants
F. Ratjen, R. Zinman, A. R. Stark, L. E. Leszczynski, and M. E. B. Wohl 1192

Breathing during sleep with mild hypoxia
K. Chin, M. Ohi, M. Hirai, T. Kuriyama, Y. Sagawa, and K. Kuno 1198

Radio frequency (13.56 MHz) energy enhances recovery from mild hypothermia
R. L. Hesslink, Jr., S. Pepper, R. G. Olsen, S. B. Lewis, and L. D. Homer 1208

Dynamics of the collateral pathways of canine lungs after flow interruption
M. S. Ludwig, S. Bellofiore, S. A. Shore, J. M. Drazen, and J. J. Fredberg 1213

A comparison of the dose-response behavior of canine airways and parenchyma
M. S. Ludwig, P. V. Romero, and J. H. T. Bates 1220

Hypoxia-induced periodic breathing in newborn lambs
E. Canet, J. L. Carroll, and M. A. Bureau 1226

Analysis of oxygen delivery and uptake relationships in the Krogh tissue model
P. T. Schumacker and R. W. Samsel 1234

Surface EMG power spectrum and intramuscular pH in human vastus lateralis muscle during dynamic exercise
P. Bouissou, P. Y. Estrade, F. Goubel, C. Y. Guezennec, and B. Serrurier 1245

Effects of gas bubbling and other forms of convection on platelets in vitro
D. M. Pickles, D. Ogston, and A. G. Macdonald 1250

Effects of antigen on tracheal circulation and smooth muscle in sheep of different ages
S. E. Webber, R. O. Salonen, M. E. Deffebach, and J. G. Widdicombe 1256

Calcitonin gene-related peptide vasodilation of human pulmonary vessels
D. G. McCormack, J. C. W. Mak, M. O. Coupe, and P. J. Barnes 1265

A possible dopaminergic pathway mediating hypoxic depression in neonatal rabbits
M. Srinivasan, H. Lagercrantz, and Y. Yamamoto 1271

SPECIAL COMMUNICATIONS

Occlusion pressures vs. micropipette pressures in the pulmonary circulation
T. S. Hakim and S. Kelly 1277

Measurement of lung water dynamics and lung aeration in the perinatal period by use of digitial X-ray fluoroscopy
J. E. Maloney, Y. Takahashi, C. Kondo, and W. M. Schoel 1286

RAPID COMMUNICATIONS

Muscarinic receptor reserve and β-adrenergic sensitivity in tracheal smooth muscle
S. J. Gunst, J. Q. Stropp, and N. A. Flavahan 1294

LETTERS TO THE EDITOR

$\dot{V}O_{2\,max}$ limits
F. W. Booth 1299

ABSTRACTS FROM CURRENT LITERATURE 1301

No. 4. OCTOBER 1989

BRIEF REVIEW

Cervical magnetic stimulation: a new painless method for bilateral phrenic nerve stimulation in conscious humans
T. Similowski, B. Fleury, S. Launois, H. P. Cathala, P. Bouche, and J. P. Derenne 1311

Influence of plasma catecholamines on the lactate threshold during graded exercise
R. S. Mazzeo and P. Marshall 1319

Measurement of lung fluid volumes and albumin exclusion in sheep
N. A. Pou, R. J. Roselli, R. E. Parker, J. A. Clanton, and T. R. Harris 1323

Response to acetylcholine and myosin content of isolated canine airways
C. E. Mapp, P. Chitano, N. De Marzo, P. Di Blasi, M. Saetta, A. Di Stefano, V. M. Bosco, L. Allegra, and L. M. Fabbri 1331

Contact phase of blood coagulation is not activated in edema of high altitude
P. Bärtsch, B. Lämmle, I. Huber, A. Haeberli, P. Vock, O. Oelz, and P. W. Straub 1336

Diaphragmatic plate electrode stimulation of the hamster diaphragm
W. D. Reid, T. Blogg, B. J. Wiggs, P. D. Paré, and R. L. Pardy 1341

Tracheal hysteresis in sleep apnea
I. Katz, N. Zamel, A. S. Slutsky, A. S. Rebuck, and V. Hoffstein 1349

Effect of inert gas switching at depth on decompression outcome in rats
R. S. Lillo and M. E. MacCallum 1354

Bötzinger complex region role in phrenic-to-phrenic inhibitory reflex of cat
D. F. Speck 1364

Regional variations in lung expansion in rabbits: prone vs. supine positions
Q.-H. Yang, M. R. Kaplowitz, and S. J. Lai-Fook 1371

Antenatal steroids, postnatal surfactant, and pulmonary function in premature rabbits
I. M. Gladstone, M. R. Mercurio, S. G. Devenny, and H. C. Jacobs 1377

Chronic CO exposure stimulates erythropoiesis but not glomus cell growth
A. K. Sherpa, K. H. Albertine, D. G. Penney, B. Thompkins, and S. Lahiri 1383

Influence of tone on responses to acetylcholine in the rabbit pulmonary vascular bed
A. L. Hyman and P. J. Kadowitz 1388

Inspiratory action of separate external and parasternal intercostal muscle contraction
K. Budzinska, G. Supinski, and A. F. DiMarco 1395

Contractile properties of old rat muscles: effect of increased use
H. Klitgaard, R. Marc, A. Brunet, H. Vandewalle, and H. Monod 1401

Morphological and biochemical changes in old rat muscles: effect of increased use
H. Klitgaard, A. Brunet, B. Maton, C. Lamaziere, C. Lesty, and H. Monod 1409

Lung volumes after an increase in lung distension in pneumonectomized ferrets
J. T. McBride 1418

Elastic moduli of lungs during postnatal development in the piglet
A. L. Mansell, R. R. Moalli, C. L. Calista, and A. C. Pipkin 1422

Reflex responses to capsaicin: intravenous, aerosol, and intratracheal administration
F. Palecek, G. Sant'Ambrogio, F. B. Sant'Ambrogio, and O. P. Mathew 1428

Expiratory muscle contribution to tidal volume in head-up dogs
G. A. Farkas, M. Estenne, and A. De Troyer 1438

Bronchoalveolar lavage in interstitial lung disease: effect of volume of fluid infused
R. A. Helmers, C. S. Dayton, C. Floerchinger, and G. W. Hunninghake 1443

Respiratory sinus arrhythmia in the denervated human heart
L. Bernardi, F. Keller, M. Sanders, P. S. Reddy, B. Griffith, F. Meno, and M. R. Pinsky 1447

Decreased exercise muscle lactate release after high altitude acclimatization
P. R. Bender, B. M. Groves, R. E. McCullough, R. G. McCullough, L. Trad, A. J. Young, A. Cymerman, and J. T. Reeves 1456

Nafamstat mesilate attenuates pulmonary hypertension in heparin-protamine reactions
E. Kreil, G. Montalescot, E. Greene, C. Fitzgibbon, D. Robinson, D. Chenoweth, and W. M. Zapol 1463

Rib cage vs. abdominal displacement in dogs during forced oscillation to 32 Hz
B. R. Boynton, G. Glass, I. D. Frantz III, and J. J. Fredberg 1472

A new method to evaluate extravascular albumin and blood cell accumulation in the lung
M. F. Bureau, E. Malanchere, M. Pretolani, M. A. Boukili, and B. B. Vargaftig 1479

Alveolar pressure inhomogeneity and gas exchange during constant-flow ventilation in dogs
J. I. Sznajder, A. Nahum, G. Crawford, E. R. Pollak, P. T. Schumacker, and L. D. H. Wood 1489

Acetylcholine's effect on vascular resistance and compliance in the pulmonary circulation
S. A. Barman, E. Senteno, S. Smith, and A. E. Taylor 1495

Virus induces airway hyperresponsiveness to tachykinins: role of neutral endopeptidase
D. J. Dusser, D. B. Jacoby, T. D. Djokic, I. Rubinstein, D. B. Borson, and J. A. Nadel 1504

Bradykinin produces pulmonary vasodilation in fetal lambs: role of prostaglandin production
E. Frantz, S. J. Soifer, R. I. Clyman, and M. A. Heymann 1512

Characterization of expiratory intercostal activity to triangularis sterni in cats
J.-C. Hwang, D. Zhou, and W. M. St. John 1518

Diaphragmatic electromyography using a multiple electrode array
J. A. Daubenspeck, J. C. Leiter, J. F. McGovern, S. L. Knuth, and E. J. Kobylarz 1525

Mechanism of action of ozone on the human lung
M. J. Hazucha, D. V. Bates, and P. A. Bromberg 1535

Lung volumes, chest wall configuration, and pattern of breathing in microgravity
M. Paiva, M. Estenne, and L. A. Engel 1542

Decreased O_2 consumption and cardiac output during normobaric hyperoxia in conscious dogs
R. F. Lodato 1551

Diaphragmatic thickness-lung volume relationship in vivo
J. L. Wait, P. A. Nahormek, W. T. Yost, and D. P. Rochester 1560

Rabbit hindlimb glucose uptake assessed with positron-emitting fluorodeoxyglucose
K. A. Mossberg, R. W. Rowe, T. J. Tewson, and H. Taegtmeyer 1569

Evidence for second metabolic pathway for O_2 from Pti_{O_2} measurements in denervated cat carotid body
D. G. Buerk, P. K. Nair, and W. J. Whalen 1578

Endothelial cell subpopulations in vitro: cell volume, cell cycle, and radiosensitivity
D. B. Rubin, E. A. Drab, and K. D. Bauer 1585

Determinants of gas flow through a bronchopleural fistula
M. C. Walsh and W. A. Carlo 1591

Surfactant secretion and clearance in the newborn
P. A. Stevens, J. R. Wright, and J. A. Clements 1597

Does atrial natriuretic factor protect against right ventricular overload? I. Hemodynamic study
L. C. Ou, G. L. Sardella, N. S. Hill, and C. D. Thron 1606

Does atrial natriuretic factor protect against right ventricular overload? II. Tissue binding
L. C. Ou, S. Yen, G. L. Sardella, and N. S. Hill 1612

Effect of helium-oxygen pressure on dopamine detected in vivo in the striatum of hamsters
C. Forni and J.-C. Rostain 1617

Lung impedance in healthy humans measured by forced oscillations from 0.01 to 0.1 Hz
B. Suki, R. Peslin, C. Duvivier, and R. Farré 1623

Chemosensitivity and the ventilatory response to airflow obstruction during sleep
K. Gleeson, C. W. Zwillich, and D. P. White 1630

Influence of age and exercise training on lipid metabolism in Fischer-344 rats
H. A. Barakat, G. L. Dohm, N. Shukla, R. H. L. Marks, M. Kern, J. W. Carpenter, and R. S. Mazzeo 1638

Sensitivity of bioelectrical impedance to detect changes in human body composition
R. Ross, L. Léger, P. Martin, and R. Roy 1643

Flow distribution through human and canine airways during inhalation and exhalation
J. K. Briant and B. S. Cohen 1649

Theophylline does not increase maximal tetanic force or diaphragm endurance in vitro
M. B. Reid and M. J. Miller 1655

A new technique to demonstrate flow limitation in partial expiratory flow-volume curves in infants
F. Ratjen, R. Zinman, and M. E. B. Wohl 1662

MODELING METHODOLOGY FORUM

Permeation of inert gases through human skin: modeling the effect of skin blood flow
J. M. Whang, J. A. Quinn, D. J. Graves, and G. R. Neufeld 1670

SPECIAL COMMUNICATIONS

A computerized respiratory system including test functions of lung and circulation
J. R. C. Jansen, E. Hoorn, J. Van Goudoever, and A. Versprille 1687

A treadmill-mounted force platform
R. Kram and A. J. Powell 1692

Display of the alveolar plateau of single-breath tests in "dilution index" format
H. D. Van Liew and R. K. Mahajan 1699

BOOKSHELF 1704

ABSTRACTS FROM CURRENT LITERATURE 1705

No. 5. NOVEMBER 1989

Control of shunt pathway perfusion in diffuse granulomatous lung disease
L. L. Schulman, J. A. Wood, and Y. Enson 1717

Regional and temporal variation in canine peripheral lung responses to dry air
A. N. Freed 1727

Immunoadjuvants enhance the febrile responses of rats to endogenous pyrogen
J. T. Stitt and S. G. Shimada 1734

Enhancement of the febrile responses of rats to endogenous pyrogen occurs within the OVLT region
J. T. Stitt and S. G. Shimada 1740

Naloxone alters the early response to an inspiratory flow-resistive load
A. T. Scardella, T. V. Santiago, and N. H. Edelman 1747

Effect of a synthetic progestin on ventilatory response to hypoxia in anesthetized rats
H. Kimura, M. Mikami, T. Kuriyama, and Y. Fukuda 1754

Sustained maximal ventilation after endurance exercise in athletes
J. D. Anholm, J. Stray-Gundersen, M. Ramanathan, and R. L. Johnson, Jr. 1759

Nonadrenergic bronchodilation in adult and young guinea pigs
C. Clerici, I. Macquin-Mavier, and A. Harf 1764

Tissue glucose utilization during epinephrine-induced hyperglycemia
K. Mészáros, C. H. Lang, D. M. Hargrove, and J. J. Spitzer 1770

Effect of hypercapnia and hypoxia on respiratory muscle activation in humans
Y. Takasaki, D. Orr, J. Popkin, A. Xie, and T. D. Bradley 1776

Mechanical analysis of extrapulmonary volume displacements in the thorax and abdomen
S. A. Ben-Haim, O. Lichtenstein, and G. M. Saidel 1785

Differential control of forearm and calf vascular resistance during one-leg exercise
J. A. Taylor, M. J. Joyner, P. B. Chase, and D. R. Seals 1791

Influence of muscle mass on sympathetic neural activation during isometric exercise
D. R. Seals 1801

Muscle morphological and biochemical adaptations to training in obese Zucker rats
C. E. Torgan, J. T. Brozinick, Jr., G. M. Kastello, and J. L. Ivy 1807

Respiratory effects of *N*-methyl-D-aspartate on the ventrolateral medullary surface
J. Mitra, N. R. Prabhakar, J. L. Overholt, and N. S. Cherniack 1814

Work capacity during 30 days of bed rest with isotonic and isokinetic exercise training
J. E. Greenleaf, E. M. Bernauer, A. C. Ertl, T. S. Trowbridge, and C. E. Wade 1820

Hindlimb suspension suppresses muscle growth and satellite cell proliferation
K. C. Darr and E. Schultz 1827

Impulse propagation and muscle activation in long maximal voluntary contractions
C. K. Thomas, J. J. Woods, and B. Bigland-Ritchie 1835

Influence of carbohydrate dosage on exercise performance and glycogen metabolism
J. B. Mitchell, D. L. Costill, J. A. Houmard, W. J. Fink, D. D. Pascoe, and D. R. Pearson 1843

Pulmonary transvascular flux of transferrin
J. A. Cooper and A. B. Malik 1850

Blood flow distribution in rat muscles during preexercise anticipatory response
R. B. Armstrong, D. A. Hayes, and M. D. Delp 1855

CONTENTS OF VOLUME 67

Effect of induced alkalosis on perception of exertion during intermittent exercise
A. Swank and R. J. Robertson 1862

Iron deficiency decreases gluconeogenesis in isolated rat hepatocytes
K. L. Klempa, W. T. Willis, R. Chengson, P. R. Dallman, and G. A. Brooks 1868

Step response of lung surface-to-volume ratio by light-scattering stereology
J. P. Butler, H. Miki, S. Suzuki, and T. Takishima 1873

Relative importance of aerobic and anaerobic energy release during short-lasting exhausting bicycle exercise
J. I. Medbø and I. Tabata 1881

Protein clearance from the air spaces and lungs of unanesthetized sheep over 144 h
Y. Berthiaume, K. H. Albertine, M. Grady, G. Fick, and M. A. Matthay 1887

Fate of air emboli in the pulmonary circulation
R. G. Presson, Jr., K. R. Kirk, K. A. Haselby, J. H. Linehan, S. Zaleski, and W. W. Wagner, Jr. 1898

Simultaneous measurement of O_2 radicals and pulmonary vascular reactivity in rat lung
S. L. Archer, D. P. Nelson, and E. K. Weir 1903

Detection of activated O_2 species in vitro and in rat lungs by chemiluminescence
S. L. Archer, D. P. Nelson, and E. K. Weir 1912

Field use of $D_2{}^{18}O$ to measure energy expenditure of soldiers at different energy intakes
J. P. DeLany, D. A. Schoeller, R. W. Hoyt, E. W. Askew, and M. A. Sharp 1922

Lengths and topology of alveolar septal borders
E. H. Oldmixon, J. P. Butler, and F. G. Hoppin, Jr. 1930

Distribution of elastin and collagen in canine lung alveolar parenchyma
E. H. Oldmixon and F. G. Hoppin, Jr. 1941

Systemic and mesenteric O_2 metabolism in endotoxic pigs: effect of ibuprofen and meclofenamate
M. P. Fink, H. R. Rothschild, Y. F. Deniz, H. Wang, P. C. Lee, and S. M. Cohn 1950

Exercise-induced hypercapnia in the horse
W. M. Bayly, D. R. Hodgson, D. A. Schulz, J. A. Dempsey, and P. D. Gollnick 1958

Size-related differences in parietal extrapleural and pleural liquid pressure distribution
D. Negrini and G. Miserocchi 1967

Human respiratory impedance from 8 to 256 Hz corrected for upper airway shunt
R. Farre, R. Peslin, E. Oostveen, B. Suki, C. Duvivier, and D. Navajas 1973

Hemodynamic responses to acute hypoxia, hypobaria, and exercise in subjects susceptible to high-altitude pulmonary edema
A. Kawashima, K. Kubo, T. Kobayashi, and M. Sekiguchi 1982

Furosemide reduces lung fluid filtration in lambs with lung microvascular injury from air emboli
M. E. Berner, W. G. Teague, Jr., R. G. Scheerer, and R. D. Bland 1990

Permeability of human endothelial monolayers: effect of vasoactive agonists and cAMP
S. A. Casnocha, S. G. Eskin, E. R. Hall, and L. V. McIntire 1997

Afferent and cardiodynamic drives in the early phase of exercise hyperpnea in humans
T. Morikawa, Y. Ono, K. Sasaki, Y. Sakakibara, Y. Tanaka, R. Maruyama, Y. Nishibayashi, and Y. Honda 2006

Lung structure parameters estimated from modeling aerosol deposition in isolated dog lungs
F. S. Rosenthal 2014

Skeletal muscle β-receptors and isoproterenol-stimulated vasodilation in canine heart failure
M. J. Frey, V. Lanoce, P. B. Molinoff, and J. R. Wilson 2026

Chromatographic demonstration of reversible changes in endothelial permeability
F. R. Haselton, S. N. Mueller, R. E. Howell, E. M. Levine, and A. P. Fishman 2032

Appearance of "transitional" motor units in overloaded rat skeletal muscle
E. G. Noble and F. P. Pettigrew 2049

Effects of sustained exercise on pulmonary clearance of aerosolized ^{99m}Tc-DTPA
A. M. Lorino, M. Meignan, P. Bouissou, and G. Atlan 2055

Effects of ovariectomy on energy metabolism in exercising rat muscle studied by ^{31}P-NMR
Z. Roth, Z. Argov, J. Maris, K. K. McCully, J. S. Leigh, Jr., and B. Chance 2060

Effects of 4- and 8-h preexercise feedings on substrate use and performance
M. G. Flynn, T. J. Michaud, J. Rodriguez-Zayas, C. P. Lambert, J. B. Boone, and R. W. Moleski 2066

Altered sarcoplasmic reticulum function after high-intensity exercise
S. K. Byrd, L. J. McCutcheon, D. R. Hodgson, and P. D. Gollnick 2072

Contracture and change in membrane potential produced by sodium removal in the dog trachea and bronchiole
Y. Ito and T. Inoue 2078

Patterns of intercostal muscle activity in humans
W. A. Whitelaw and T. Feroah 2087

Influence of ventilation and hypocapnia on sympathetic nerve responses to hypoxia in normal humans
V. K. Somers, A. L. Mark, D. C. Zavala, and F. M. Abboud 2095

Contrasting effects of hypoxia and hypercapnia on ventilation and sympathetic activity in humans
V. K. Somers, A. L. Mark, D. C. Zavala, and F. M. Abboud 2101

Transition from dynamically maintained to relaxed end-expiratory volume in human infants
A. A. Colin, M. E. B. Wohl, J. Mead, F. A. Ratjen, G. Glass, and A. R. Stark 2107

Changes of time constants during infancy and early childhood
F. A. Ratjen, A. A. Colin, A. R. Stark, J. Mead, and M. E. B. Wohl 2112

Species dependence of baroreceptor effects on ventilation in the cat and the dog
R. Maass-Moreno and P. G. Katona 2116

SPECIAL COMMUNICATIONS

Electrode for selective recording of electromyograms from intercostal muscles
W. A. Whitelaw and D. R. Markham 2125

Validation of oxygen consumption measurements during artificial ventilation
J. F. Nunn, K. Makita, and B. Royston 2129

Operation Everest II: comparison of four instruments for measuring blood O_2 saturation
V. A. Forte, Jr., M. K. Malconian, R. L. Burse, P. B. Rock, P. M. Young, L. A. Trad, B. A. Ruscio, J. R. Sutton, C. S. Houston, and A. Cymerman 2135

In situ isolated perfused and innervated left hemidiaphragm preparation
S. N. A. Hussain, C. Roussos, and S. Magder 2141

Responses of isolated guinea pig pulmonary venules to hypoxia and anoxia
W. R. Tracey, J. T. Hamilton, I. D. Craig, and N. A. M. Paterson 2147

RAPID COMMUNICATIONS

Changes in body temperature of rats acclimated to heat with different acclimation schedules
O. Shido, Y. Yoneda, and T. Nagasaka 2154

Oxidation/reduction state of cytochrome oxidase during repetitive contractions
W. N. Stainsby, W. F. Brechue, D. M. O'Drobinak, and J. K. Barclay 2158

LETTERS TO THE EDITOR

Hemoglobin O_2 affinity and tissue hypoxia
J. B. West; G. Gutierrez 2163

BOOKSHELF 2164

ABSTRACTS FROM CURRENT LITERATURE 2165

ANNOUNCEMENTS 2189

No. 6. DECEMBER 1989

BRIEF REVIEW

Exercise-training protocols for astronauts in microgravity
J. E. Greenleaf, R. Bulbulian, E. M. Bernauer, W. L. Haskell, and T. Moore 2191

Phasic capillary pressure determined by arterial occlusion in intact dog lung lobes
Y. Yamada, M. Suzukawa, M. Chinzei, T. Chinzei, N. Kawahara, K. Suwa, and K. Numata 2205

Flow and volume dependence of respiratory mechanical properties studied by forced oscillation
E. Oostveen, R. Peslin, C. Gallina, and A. Zwart 2212

Viscoelastic behavior of lung and chest wall in dogs determined by flow interruption
T. Similowski, P. Levy, C. Corbeil, M. Albala, R. Pariente, J.-P. Derenne, J. H. T. Bates, B. Jonson, and J. Milic-Emili 2219

Muscle malonyl-CoA decreases during exercise
W. W. Winder, J. Arogyasami, R. J. Barton, I. M. Elayan, and P. R. Vehrs 2230

Airway level at which edema liquid enters the air space of isolated dog lungs
R. L. Conhaim 2234

Regulation of glycogenolysis in human skeletal muscle
J.-M. Ren and E. Hultman 2243

Stimulation of vagal C-fibers alters timing and distribution of respiratory motor output in cats
H. R. Holmes and J. E. Remmers 2249

Rapid shallow breathing caused by pulmonary vascular congestion in cats
J. Hatridge, A. Haji, J. R. Perez-Padilla, and J. E. Remmers 2257

Rate of CO uptake by canine erythrocytes as a function of P_{O_2}
R. O. Crapo, N. Bitterman, S. L. Berlin, and R. E. Forster 2265

Pulmonary vasodilator responses to atrial natriuretic factor and sodium nitroprusside
I. Cigarini, S. Adnot, P.-E. Chabrier, I. Viossat, P. Braquet, and B. Gaujour 2269

Respiratory mechanics in the normal dog determined by expiratory flow interruption
J. H. T. Bates, K. A. Brown, and T. Kochi 2276

Effects of altitude acclimatization on pulmonary gas exchange during exercise
D. E. Bebout, D. Story, J. Roca, M. C. Hogan, D. C. Poole, R. Gonzalez-Camarena, O. Ueno, P. Haab, and P. D. Wagner 2286

Effects of tracheal airway occlusion on hyoid muscle length and upper airway volume
E. van Lunteren, M. A. Haxhiu, and N. S. Cherniack 2296

Diaphragm, genioglossus, and triangularis sterni responses to poikilocapnic hypoxia
E. van Lunteren, R. J. Martin, M. A. Haxhiu, and W. A. Carlo 2303

Myosin heavy chain turnover and glucocorticoid deterrence by exercise in muscle
S. M. Czerwinski, R. Zak, T. T. Kurowski, M. T. Falduto, and R. C. Hickson 2311

Modulation of endoperoxide product levels and cyclophosphamide-induced injury by glutathione repletion
J. A. D. Cooper, Jr. and W. W. Merrill 2316

Density dependence of respiratory system impedances between 5 and 320 Hz in humans
A. C. Jackson, C. A. Giurdanella, and H. L. Dorkin 2323

Extracorporeal bicarbonate space after bicarbonate or a bicarbonate-carbonate mixture in acidotic dogs
N. B. Kindig, D. S. Sherrill, J. I. Shapiro, and G. F. Filley 2331

Influences of exogenous insulin on arterial blood pressure measurements of the rat
J. G. Edwards and C. M. Tipton 2335

Analysis of noninvasive macromolecular transport measurements in the lung
R. J. Roselli and W. R. Riddle 2343

Effects of acute hyperbaric oxygenation on respiratory control in cats
D. Torbati, A. Mokashi, and S. Lahiri 2351

Sonomicrometric regional diaphragmatic shortening in awake sheep after thoracic surgery
A. Torres, W. R. Kimball, J. Qvist, K. Stanek, R. M. Kacmarek, R. I. Whyte, G. Montalescot, and W. M. Zapol 2357

Postural baroreflex stimuli may affect EEG arousal and sleep in humans
R. J. Cole 2369

Effect of training on muscle metabolism during treadmill sprinting
M. E. Cheetham Nevill, L. H. Boobis, S. Brooks, and C. Williams 2376

Amino acid exchange between plasma and erythrocytes in vivo in humans
D. Darmaun, P. Froguel, M. Rongier, and J.-J. Robert 2383

A captive bubble method reproduces the in situ behavior of lung surfactant monolayers
S. Schürch, H. Bachofen, J. Goerke, and F. Possmayer 2389

Somatostatin potentiates cholinergic neurotransmission in ferret trachea
K. Sekizawa, P. D. Graf, and J. A. Nadel 2397

Decline in lung liquid volume and secretion rate during oligohydramnios in fetal sheep
K. A. Dickson and R. Harding 2401

On the imperfect elasticity of lung tissue
J. J. Fredberg and D. Stamenovic 2408

Diaphragm atrophy and weakness in cortisone-treated rats
B. J. Moore, M. J. Miller, H. A. Feldman, and M. B. Reid 2420

Glottic and cervical tracheal narrowing in patients with obstructive sleep apnea
I. Rubinstein, T. D. Bradley, N. Zamel, and V. Hoffstein 2427

Prevention of interleukin 2-induced acute lung injury in guinea pigs by pentoxifylline
A. Ishizaka, J. R. Hatherill, H. Harada, M. Yonemaru, H. Hoffmann, H. Zheng, P. T. O'Hanley, and T. A. Raffin 2432

Ventilatory control during exercise with peripheral chemoreceptor stimulation: hypoxia vs. domperidone
S. L. Schaefer and G. S. Mitchell 2438

Phosphorylation of rodent cardiac myosin light chain 2: effects of exercise
D. P. Fitzsimons, P. W. Bodell, and K. M. Baldwin 2447

Tachykinins mediate hypocapnia-induced bronchoconstriction in guinea pigs
A. M. Reynolds and R. D. McEvoy 2454

A muscarinic agonist inhibits reflex bronchoconstriction in normal but not in asthmatic subjects
P. A. H. Minette, J.-W. J. Lammers, C. M. S. Dixon, M. T. McCusker, and P. J. Barnes 2461

Free fatty acid availability and temperature regulation in cold water
L. Martineau and I. Jacobs 2466

Conductive and convective heat flows of exercising humans in cold water
G. Ferretti, A. Veicsteinas, and D. W. Rennie 2473

Zymosan-activated plasma causes prolonged decreases in PMN superoxide release in sheep
K. H. Albertine, F. Cerasoli, Jr., M. V. Tahamont, Y. Ishihara, J. T. Flynn, S. P. Peters, and M. H. Gee 2481

Increased total concentration of Na-K pumps in vastus lateralis muscle of old trained human subjects
H. Klitgaard and T. Clausen 2491

Pulmonary responses to phospholipase A_2 in the perfused guinea pig lung
W. M. Selig, S. K. Durham, and A. F. Welton 2495

Degradative enzymes modulate airway responses to intravenous neurokinins A and B
S. A. Shore and J. M. Drazen 2504

Morphometric study of human alveolar ducts based on serial sections
D. Ciurea and J. Gil 2512

Epithelial vs. serosal stimulation of tracheal muscle: role of epithelium
D. Pavlovic, M. Fournier, M. Aubier, and R. Pariente 2522

Effects of hypothermia on rat brain pH_i and phosphate metabolite regulation by ^{31}P-NMR
D. C. Johnson, M. Nishimura, P. Okunieff, H. Kazemi, and B. Hitzig 2527

Early dynamics of O_2 uptake and heart rate as affected by exercise work rate
K. E. Sietsema, J. A. Daly, and K. Wasserman 2535

Dibutyryl cAMP, aminophylline, and β-adrenergic agonists protect against pulmonary edema caused by phosgene
T. P. Kennedy, J. R. Michael, J. R. Hoidal, D. Hasty, A. M. Sciuto, C. Hopkins, R. Lazar, G. K. Bysani, E. Tolley, and G. H. Gurtner 2542

Lateral nasal gland secretion in the anesthetized ferret
H. Mizoguchi and J. G. Widdicombe 2553

Respiratory mechanics in anesthetized paralyzed humans: effects of flow, volume, and time
E. D'Angelo, E. Calderini, G. Torri, F. M. Robatto, D. Bono, and J. Milic-Emili 2556

Effect of exercise, hyperpnea, and bronchoconstriction on plasma atrial natriuretic peptide
I. Rubinstein, T. F. Reiss, D. G. Gardner, J. Liu, B. G. Bigby, and H. A. Boushey, Jr. 2565

Hyperosmotic-induced bronchoconstriction in the canine lung periphery
A. N. Freed, K.-T. Yiin, and C. E. Stream 2571

Aerosol deposition in the lung with asymmetric airways obstruction: in vivo observation
C. S. Kim, M. A. Eldridge, L. Garcia, and A. Wanner 2579

Cimetidine reduces hyperoxic lung injury in lambs
T. A. Hazinski, M. France, K. A. Kennedy, and T. N. Hansen 2586

Reduced erythrocyte deformability alters pulmonary hemodynamics
M. P. Doyle, W. R. Galey, and B. R. Walker 2593

Force deficit during the onset of muscle hypertrophy
S. C. Kandarian and T. P. White 2600

Respiration during recovery from exercise: effects of trapping and release of femoral blood flow
J. A. Innes, I. Solarte, A. Huszczuk, E. Yeh, B. J. Whipp, and K. Wasserman 2608

Inspiratory function of the levator costae and external intercostal muscles in the dog
A. De Troyer and G. A. Farkas 2614

Airways responsiveness determined by consecutive histamine challenges in asymptomatic asthmatics
M. Küng, G. C. Scott, and N. K. Burki 2622

SPECIAL COMMUNICATIONS

Blood gas changes during and after nonspecific airway challenge in asthmatic and normal subjects
R. Dal Negro and L. Allegra 2627

Airway pressure-volume curve estimated by flow interruption during forced expiration
N. Ohya, J. Huang, T. Fukunaga, and H. Toga 2631

LETTERS TO THE EDITOR

A pulsed diagonal-beam ultrasonic airflow meter
C. Buess and W. Guggenbühl 2639

Response of bronchial vasculature to local or systemic hypoxia and hypercapnia
N. C. Syabbalo; E. M. Wagner and W. Mitzner 2639

Lactate formation and tissue hypoxia
K. Sahlin; F. Carraro and R. R. Wolfe 2640

Do lactate and ventilatory thresholds differ?
Y. Yamamoto and R. L. Hughson; W. L. Beaver, K. Wasserman, and B. J. Whipp 2640

BOOKSHELF 2643

ABSTRACTS FROM CURRENT LITERATURE 2645

ANNOUNCEMENTS 2655

Subject Index to Volume 67 2657
Author Index to Volume 67 2679